

PATENT**REMARKS**

Claims 1-20 and 41-45 are currently pending in this application. Applicants have cancelled claims 21-40 without prejudice in response to a restriction requirement and added new claims 46-48. Reconsideration is respectfully requested in light of the above claim amendments and the following remarks.

The Examiner rejected claims 1-20 and 41-45 under 35 U.S.C §102(b) as being anticipated by U.S. Patent 5,814,077 to Shoulder et al. or U.S. Patent 5,374,281 to Kristall et al. Applicants respectfully traverse this rejection.

Applicants' claimed invention, as recited in pending independent claim 1 is directed toward a method for setting an atrioventricular delay in a cardiac stimulation device. For example, independent claim 1 recites a method comprised in part by adjusting an atrioventricular delay until an intrinsic ventricular event is detected, maintaining the adjusted atrioventricular delay for a predetermined number of cardiac cycles and storing the adjusted atrioventricular delay if at least a predetermined percentage of ventricular events during the predetermined number of cardiac cycles comprise intrinsic ventricular events. (Underlining added for emphasis only). Applicants respectfully submit that neither Shoulder et al. or Kristall et al., alone or in combination, disclose or suggest the recited claim elements.

Rather, Shoulder et al. disclose a method of operating an implantable dual-chamber pacemaker that automatically sets or adjusts the AV interval (or PV interval) of the pacemaker to a long value or a short value. For example, in the method of Shoulder et al. a longer AV interval is used if AV conduction is present thereby preserving the natural hemodynamics of the heart and conserving the limited energy of the pacemaker's battery. However, if AV block exists (as determined by the lack of an R-wave during the longer AV interval), then a V-pulse is generated to pace the ventricle, and the shorter AV interval is used thereafter. Thus, Shoulder et al. switch between a long AV interval and a short AV interval in response to the occurrence of a single naturally conducted R-wave following an intrinsic or paced atrial event. (Shoulder et al., col. 8, lines 49-62)

BEST AVAILABLE COPY

PATENT

Similarly, Kristall et al. disclose a rate responsive pacer having a hysteresis mode during which the pacemaker first determines whether any intrinsic cardiac activity has occurred during a base escape interval. If not, a stimulation pulse is generated at a rate determined by the base escape interval. If so, the base escape interval is adjusted by a specified amount, effectively extending the base escape interval to an extended value. The extended value of the escape interval is thereafter used by the pacemaker as the pacemaker's escape interval as long as intrinsic cardiac activity is sensed during the extended escape interval. However, should no intrinsic cardiac activity be sensed during the extended escape interval then a stimulation pulse is generated, and the value of the escape interval used thereafter by the pacemaker is returned to the basic escape interval. Thus Kristall et al. also adjust the escape (i.e. the AV delay) until a single intrinsic event is detected.

However, neither Shoulder et al. or Kristall et al., alone or in combination, disclose or suggest maintaining an adjusted atrioventricular delay for a predetermined number of cardiac cycles after the detection of an intrinsic event and storing the adjusted atrioventricular delay if at least a predetermined percentage of ventricular events during the predetermined number of cardiac cycles comprise intrinsic ventricular events as recited in claim 1 of the present invention. Accordingly, applicants respectfully submit that claim 1 is novel and unobvious over Shoulder et al. and Kristall et al. and is therefore allowable. Applicants further submit that claims 2-8 that depend from claim 1 are allowable as is claim 1 and for additional limitations recited therein.

Similarly, independent claims 9, 14 and 41 are directed toward an apparatus or corresponding method for automatically measuring an atrioventricular conduction time. For example, claim 9 recites a cardiac stimulation device comprised in part by means for determining atrioventricular conduction times for a plurality of cardiac cycles and means for determining, based on the atrioventricular conduction times, a conduction time value for which at least a predetermined percentage of ventricular events during the plurality of cardiac cycles comprise intrinsic ventricular events. (Underlining added for emphasis only). Applicants respectfully submit that neither Shoulder et al. or Kristall et al., alone or in combination, disclose or suggest the recited claim elements.

PATENT

Rather, as argued above with respect to claim 1, both Shoulder et al. and Kristall et al. adjust the AV delay until a single intrinsic event is detected and thereafter use this AV delay in their pacing algorithms. Accordingly, applicants respectfully submit that independent claims 9, 14 and 41 are novel and unobvious over Shoulder et al. and Kristall et al. and are therefore allowable. Applicants further submit that claims 10-13, claims 15-20 and claims 42-45 that depend from claims 9, 14 and 41 respectively, are allowable as are claims 9, 14 and 41 and for additional limitations recited therein.

Further, newly presented claim 48 recites a method for setting an atrioventricular delay in a cardiac stimulation device comprised in part by adjusting an atrioventricular delay until an intrinsic ventricular event is detected; maintaining the adjusted atrioventricular delay for a predetermined number of cardiac cycles and further adjusting the atrioventricular delay if a predetermined percentage of ventricular events during the predetermined number of cardiac cycles comprise paced ventricular events. (Underlining added for emphasis only). Applicants respectfully submit that Shoulder et al. and Kristall et al., alone or in combination, do not disclose or suggest the recited claim elements.

Rather, as argued above with respect to claim 1, both Shoulder et al. and Kristall et al. adjust the AV delay until a single intrinsic event is detected and thereafter use this AV delay in their pacing algorithms. Accordingly, applicants respectfully submit that independent claim 48 is novel and unobvious over Shoulder et al. and Kristall et al. and is therefore allowable.

In light of the above claim amendments and remarks, it is respectfully submitted that the application is in condition for allowance, and an early notice of allowance is requested.

Respectfully submitted,

12-2-04
Date

Peter A. Nichols
Reg. No. 47,822
Attorney for Applicant(s)

CUSTOMER NUMBER: 36802

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☒ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.